IS&T Mini Symposium on Neural Computation

Greg Snider
HP Labs

"Building Brains with Memristive Memory"

Wednesday, April 13, 2011
2:15 - 3:15 PM
TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: Building a brain with electronics is hard both algorithmically and from a power / density perspective. This talk will focus on three key areas:

(1) Math--nonlinear dynamics, tensor analysis, bias/variance dilemma.

(2) Hardware--Rent's rule for the brain, CV^2f losses, spatial vs. temporal locality, memristive memory, photonic communication, analog vs. digital.

(3) Algorithms--time, space, frequency domains, steerable filter theory, FFTs, tensor convolution, examples.

The talk will include demonstrations of efficiently solving some essential low-level vision processes (diffusion, contrast normalization, boundary completion) on our platform, Cog ex Machina.

Biography: Greg Snider is a researcher in nanoelectronics, currently exploring opportunities for exploiting HP Labs research in memristive memory and photonic interconnect to build cheap, low-power, intelligent machines. His background includes work in analog and digital circuit design, communications, digital signal processing, medical imaging, hardware and software synthesis, hardware and software architectures, compilers, and operating systems.

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